

When the mean optical power launched into an 8 km length of fiber is $120\text{ }\mu\text{W}$, the mean optical power at the fiber output is $3\text{ }\mu\text{W}$.

Determine:

- (a) the overall signal attenuation or loss in decibels through the fiber assuming there are no connectors or splices;

16 dB

- (b) the signal attenuation per kilometer for the fiber.

2.0 dB km^{-1}

- (c) the overall signal attenuation for a 10 km optical link using the same fiber with splices at 1 km intervals, each giving an attenuation of 1 dB;

29 dB

- (d) the numerical input/output power ratio in (c).

794.3

A multimode graded index fiber exhibits total pulse broadening of $0.1\text{ }\mu\text{s}$ over a distance of 15 km. Estimate:

- (a) the maximum possible bandwidth on the link assuming no intersymbol interference;

$B = 5\text{ Mbps}$

- (b) the pulse dispersion per unit length;

Dispersion $= 6.67\text{ ns km}^{-1}$

- (c) the bandwidth–length product for the fiber.

$BWL = 75\text{ MHz km}$
